

Braunii and *Asplenium angustifolium* were hardly to be expected here, and careful search has failed to reveal them elsewhere in the vicinity. All are species of the deep woods of mountainous regions, the station for *Asplenium angustifolium* being close upon the eastern limit of its range in New England, and that of *Aspidium aculeatum*, var. *Braunii* one of comparatively few in New England, the others being mostly confined to the White and Green mountains, or to more northern mountainous localities. Thetford, situated on the Connecticut River, is not at all mountainous, possessing only a few hills with isolated patches of woods. The ferns of the ravine, which I have described, represent then, apparently, the few survivors of a primitive, uniformly wooded condition, and will themselves undoubtedly soon succumb to the already threatened deforestation of their home.

Since writing the above, further observation reveals a single plant of *Aspidium acrostichoides*, var. *incisum*. The plant is noticeably distinct, with thicker, very dark green fronds, large, deeply-incised pinnae, and the fruiting dots occurring in small numbers on each pinna, separate, and in no case confluent or covering the pinna. President Brainerd of Middlebury kindly confirmed my identification.

THETFORD, VERMONT.

TWO NORTHEASTERN THALICTRUMS.

M. L. FERNALD.

(Plate 21.)

LATE in June, 1899, the Josselyn Botanical Society of Maine spent a forenoon exploring the south bank of the Aroostook river at Fort Fairfield, Maine. Among the more striking discoveries was a delicate meadow-rue first detected by Miss E. L. Shaw in the alluvial thicket below the village, and afterwards found in abundance, by other members of the party, in the thicket which, along the Aroostook (as well as the St. John), forms the boundary between the steep wooded bank and the gravelly beach of the river. The *Thalictrum*, then in bloom, was a dioecious or slightly polygamo-dioecious species, suggesting in its flowers, and its thin glaucous foliage, the early meadow-rue (*T. dioicum*) of southern New England. The stems of the Aroostook valley plant, however, were much taller, often 1 m. high, bearing from three

to five large leaves and some smaller ones in the inflorescence. The rootstock of the plant, furthermore, was slender and elongated, very unlike the short thickish caudex of *T. dioicum*; and while the flowering season of this northern plant was just beginning, the fruit of *T. dioicum* in southern Maine and Massachusetts was already past maturity. The plant was obviously distinct from the recognized New England species; and it was pronounced by Professor John Macoun, who was in the party, unlike any species known to him in eastern Canada. The immature condition of the material, however, rendered a final determination of the species impossible.

During the following September an unsuccessful attempt was made by the writer to secure fruit from the Fort Fairfield plants. Somewhat earlier in September, 1900, a visit was made to the St. John valley, where plants very similar in appearance to the Fort Fairfield species were seen in abundance in the thicket between the river-beach and the high wooded banks. These plants on the St. John were invariably past fruiting, as they were likewise at the original station at Fort Fairfield. About two miles from Miss Shaw's station for the plant, however, a single specimen, scarcely 4 dm. in height, was found in fine fruit. Severe early frosts had injured the plant for herbarium purposes so that after the fruit had been gathered the stem and leaves were inadvertently tossed into the river. On second thought, however, the rootstock was carefully dug and examined, when it proved to be not elongated and slender as in the plant for which it had been mistaken, but short and thickened, much as in *T. dioicum*. Upon returning to the Gray Herbarium it was found that the achenes of this plant were unlike those of any described species of the genus, and that the smaller plant of the Aroostook valley must be a second species unrecognized in our New England flora.

In Macoun's Catalogue of Canadian plants, and in Fowler's Catalogue of the plants of New Brunswick, numerous stations for *Thalictrum dioicum* in the St. John valley are cited, and the plant is also reported from "flat lands" on the Restigouche, while *T. purpurascens* is reported from numerous stations in Nova Scotia and from Anticosti. An examination of the material in the herbaria of the Canadian Geological Survey Department and of the Natural History Society of New Brunswick, kindly placed at the disposal of the writer by Professor John Macoun and by Mr. Geo. U. Hay, shows that these plants are in the main identical with the larger species recently discovered on the Aroos-

took. In these herbaria the tall plant, found in flower at Fort Fairfield by Miss Shaw, is well represented by fruiting material which proves it beyond a doubt to be *T. occidentale*, Gray, a species characteristic of the mountains of British Columbia, Washington and Oregon, rarely found eastward to the Rockies. So far as the herbarium material shows, the Nova Scotia and the Anticosti plants are both good *T. polygamum*, rather than *T. purpurascens* with which they have been placed. A fruiting specimen from the mouth of the Restigouche, reported in the first part of Macoun's Catalogue as *T. dioicum*, has subsequently been treated by Professor Trelease as a probable hybrid between that species and *T. purpurascens*. But that this disposition of the plant is far from satisfactory may be seen from the fact that the Restigouche specimen comes from a region 230 miles northeast of the nearest authenticated station of *T. dioicum*,¹ and some 450 miles from the northeastern known limit of *T. purpurascens*. The plant is, however, identical with the larger species of the St. John and Aroostook valleys and it matches perfectly *T. occidentale* of the Northwest.

The smaller *Thalictrum*, of which fruit was obtained at Fort Fairfield during the past September, is beautifully represented in the herbarium of the Geological Survey Department of Canada by a sheet of flowering specimens collected by Professor Macoun in thickets at Ottawa in August, 1894. In habit this plant strongly suggests small-leaved forms of the Rocky Mountain *T. Fendleri*, but that species has elongated rootstocks and strongly compressed achenes; while in the northeastern plant the caudex is short, and the short, plump achenes terete. This plant, as already stated, can be referred to no species of America nor of the Old World, and it is here proposed as

THALICTRUM confine. Rootstock 2 to 4 cm. long, bearing 10 to 12 strong roots: stem slender, 3 to 6 dm. high, puberulent, pale green, often finely mottled with purple, leafy to the summit: the four or five leaves glandular-pruinose, glaucous beneath, the lower including the long petiole 1.5 to 2 dm. long, the uppermost including the short petiole 3 or 4 cm. long; leaflets sub-orbicular broadly obovate or flabellate, coarsely toothed, 0.75 to 1 cm. long, the terminal on slender petiolules, the lateral short-

¹ K. C. Davis (Minn. Bot. Studies, Ser. 2, 515) credits this species to Labrador, but the occurrence of the plant in that district is seriously doubted. The only Labrador specimen so named in the herbarium of the Geological Survey Department of Canada is clearly *T. polygamum*.

petiolulate or sessile: flowers dioecious, greenish or purplish, the panicles 1 or 2 dm. high, with ascending branches: sepals greenish, oblong-lanceolate, caducous: carpels 6 to 10, glandular-pruinose; stigmatose style lance-subulate, 3 to 5 mm. long; achenes ovate-lanceolate, excluding the persistent style, 4 or 5 mm. long, 2 or 3 mm. thick, plump, subterete, scarcely compressed or ancipital, with 8 simple or slightly branched strong ribs, the alternate ones strongest; seed linear-lanceolate, hardly filling the cell.—Alluvial thickets, ONTARIO, Rideau Hall, Ottawa, in flower, August 8, 1894 (*John Macoun* in herb. Geol. Surv. Dept. Canada, no. 2,956): MAINE, by the Aroostook river, Fort Fairfield, in fruit, September 19, 1900 (*M. L. Fernald*).

The characters and eastern stations of the larger plant may be summarized as follows:

T. OCCIDENTALE, Gray. Rootstock slender, elongated: stem glabrous, 1 m. or less high, leafy to the summit, the three to six leaves glaucous beneath, smooth or minutely glandular, the lower including the long petiole 1 to 2.5 dm. long, the uppermost including the short petiole 0.5 to 1 dm. long, those of the inflorescence often simple; leaflets thin, reniform or obovate, with coarse rounded lobes, the terminal on slender petiolules, the others short-petiolulate or sessile: flowers dioecious or polygamo-dioecious, greenish or purplish, the panicles 1.5 to 3 dm. high, with ascending branches: sepals oblong: carpels glabrous or minutely glandular-pruinose; achene excluding the persistent style 6 or 7 mm. long, 2 or 3 mm. wide, compressed, strongly ancipital, with three strong somewhat branching ribs on each side: filaments, yellowish greenish or purplish, elongated, slightly clavellate; anthers linear, mucronate.—Proc. Am. Acad. VIII. 372. *T. dioicum* × *purpurascens*, Trelease in J. M. Macoun, Can. Rec. Sci., 1894, 77.—NEW BRUNSWICK, woods ("flat-lands," Fowler's Catalogue), Eel River, Restigouche Co., in fruit, July 29, 1876 (*R. Chalmers* in herb. Geol. Surv. Dept. Can. no. 844); South Tobique Lakes, July 18, 1900 (*G. U. Hay*); along the St. John river above Woodstock, in flower and young fruit, July 3, 1899 (*John Macoun* in herb. Geol. Surv. Dept. Can. no. 21,136); St. John, in fruit, Aug., 1890 (*G. U. Hay*): MAINE, thickets by the Aroostook river, Fort Fairfield, in flower, June 29, 1899 (*Miss E. L. Shaw* and others of the Josselyn Botanical Society of Maine); MANITOBA, Lake Winnipeg valley, 1857 — previously referred to *T. dioicum* (*Bourgeau*): Montana, Wyoming and westward.

GRAY HERBARIUM.

EXPLANATION OF PLATE 21. — *Thalictrum confine*, drawn by C. E. Faxon from original material. Figs. 1 and 2, fertile plant from Ottawa; fig. 3, flower of the same; fig. 4, achene from Fort Fairfield specimen.